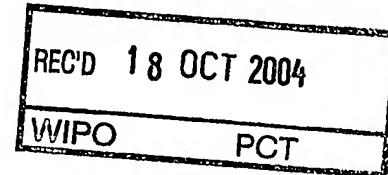


PCT/NZ2004/000223



CERTIFICATE

This certificate is issued in support of an application for Patent registration in a country outside New Zealand pursuant to the Patents Act 1953 and the Regulations thereunder.

I hereby certify that annexed is a true copy of the Provisional Specification as filed on 22 September 2003 with an application for Letters Patent number 528332 made by RAMET LIMITED.

Dated 1 October 2004.

PRIORITY DOCUMENT
SUBMITTED OR TRANSMITTED IN
COMPLIANCE WITH
RULE 17.1(a) OR (b)



Neville Harris
Commissioner of Patents, Trade Marks and Designs



528332

Provisional Specification

New Zealand Patents Act 1953

Title: Must be the same as the title on the Application for Patents (Patents form 1)

Electric Post Driver

Applicant: State (in full) name, address, and nationality of applicant or applicants

I/We David Kennett

Address Po Box 24-422, Royal Oak, Auckland
New Zealand**Nationality** New Zealand

do hereby declare this invention to be described in the following statement: (continue application on page 2)

Please submit this form with the Application for Patent (Patents Form 1)

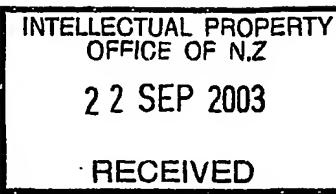
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22 SEP 2003

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Title: **Electric Post driver**

I David Kennett of PO Box 24-422, Royal Oak, Auckland, New Zealand, a New Zealand citizen do hereby declare this invention to be described in the following statement.



Signature: 

This invention relates to an electrical device for the driving of stakes or posts into the ground primarily for use in an agricultural or landscaping business.

The objective is to provide a light weight, modular unit that can be easily and rapidly mounted on a range of vehicles such as a farm bike, tractor, excavator arm, 4 wheel drive utility vehicle or boat. In addition, the unit is intended to be faster than conventional post drivers, is scalable to cater for different size posts and market costs, is extensible to cater for a wide range of post lengths, easy to break down for transportation and storage, capable of being mounted at rear, side or front of vehicle, operable from a range of power sources and, capable of alternative applications such as driving nails into post and rail fencing.

Post drivers mostly rely on potential energy to achieve impact forces in the order of 2000 N; other techniques are similarly based on mechanical energy storage such as found in springs or fast release of hydraulic fluid. These existing designs tend to be very heavy due the high driver mass of some 200 kg and the associated support structure, or they are only suitable for driving steel posts of minimal cross section such as Waratahs. As might be expected the high weight units can only be used with or mounted on large farm tractors in excess of 50 hp.

This invention relies on an electrical linear induction motor to propel a driving mass of 30 kg with sufficient acceleration to generate an effective driving force. The driving mass is contained in a movable carriage which is maintained above the driven post within an extendable guide. The motor also provides the means by which the carriage can be raised or lowered within the guide using a self-climbing technique. The guide is attached to a support vehicle using a 3-point mounting bracket that permits angular adjustment of up to 45 degrees from the vertical in one plane and up to 20 degrees from the vertical in the other plane.

An electronic controller provides the means to raise or lower the carriage, to activate the driving sequence or adjust the angular position of the guide. The driving sequence provides for a single or continuous impact cycling at a rate of many cycles per minute. Electro-hydraulic-mechanical interlocks ensure that the driving mass is not driven outside of the carriage, and also securely locks the carriage in position whilst moving the unit or placing a post in position for being driven. Electrical power is provided by the support vehicle, main power supply, battery-inverter or a stand alone generator. Most items of the unit which principally include the extendable guide, movable carriage and support bracket are made from aluminum in a manner to reduce overall weight and ensure a modular, scalable construction.

Scalability is achieved by choosing a suitably specified linear motor to suit the resistive forces of the ground into which the post is driven. Hence the same design can be scaled to provide a small scale unit operating horizontally for driving nails into post and rail fences, a medium size unit operating vertically for driving ordinary 1.8 m fence posts or Waratahs, or a large scale unit operating vertically for driving posts of up to 4.2 m in length and 300 mm diameter.

Signature: 

